Development Review Guidelines

for a Barrier Free Environment

CITY OF TORONTO PLANNING AND DEVELOPMENT DEPARTMENT
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MAY 1981

92-03353/

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Introduction

This handbook is an attempt to provide guidelines for main entrances and the space around new buildings to make them more accessible for people with physical handicaps. It demonstrates methods of making walkways, parking areas, entrances and grounds barrier-free for the handicapped person; as well as for carriages for those with children, or for persons carrying large objects. In fact, careful design aimed at eliminating barriers for physically handicapped people should provide a more functional environment for everyone.

Designing such accessible sites should not be considered extraordinary or even an addition to a plan, but should be incorporated in the initial development of the site. Although these guidelines stress barrier-free design for people with physical handicaps, the physical environment should encourage convenience and ready accessibility to all.

This handbook refers specifically to the exterior of buildings and the spaces surrounding buildings. It refers principally to those areas not regulated by the Ontario Building Code. No distinction is made between public and privately owned developments. The guidelines apply in both cases.

The format of this handbook provides basic guidelines, a rationale for the guidelines, illustrations of good design, and graphic illustrations demonstrating how to achieve these guidelines. These guidelines can be applied in most situations. However, the rationale is there to enable designers to be innovative in approaching the problem of accessibility.

In summary, buildings and other outdoor spaces should be designed in such a way that all people can live as normal a life as possible with the same choices in work, recreation, transportation and shelter.

CITY OF TORONTO
OFFICIAL PLAN • PART I

Planning & Development Department

THE STRUCTURE AND QUALITY OF THE CITY(1)

Disabled and Elderly

(i) It is the policy of Council to support, encourage and provide an appropriate level of standards and amenities to serve and meet the specific needs of the disabled, elderly and infirm, having particular regard to those standards, amenities and services related to housing, transportation, employment and income.(3)

Access for handicapped

(j) It is the policy of Council to provide for such amendments to municipal by-laws as are necessary in order to facilitate for the handicapped and disabled, ready and convenient access to and movement within buildings and public facilities.(4)

For further information call Larry E. Hodgson, 947-7339.

Non-Ambulatory Disabilities

Impairments that, regardless of cause or manifestation, for all practical purposes confine individuals to wheelchairs.

Semi-Ambulatory Disabilities

Impairments that cause individuals to walk with difficulty or insecurity. Individuals using braces or crutches, amputees, the arthritic, spastic and those with pulmonary and cardiac ills may be semi-ambulatory.

Sight Disabilities

Total blindness or impairments affecting sight to the extent that the individual functioning in public areas is insecure or exposed to danger.

Hearing Disabilities

Deafness or hearing handicaps that might make an individual insecure in public areas because he is unable to communicate or hear warning signals.

Disabilities of Incoordination

Faulty coordination due to palsy from brain, spinal, or peripheral nerve injury.

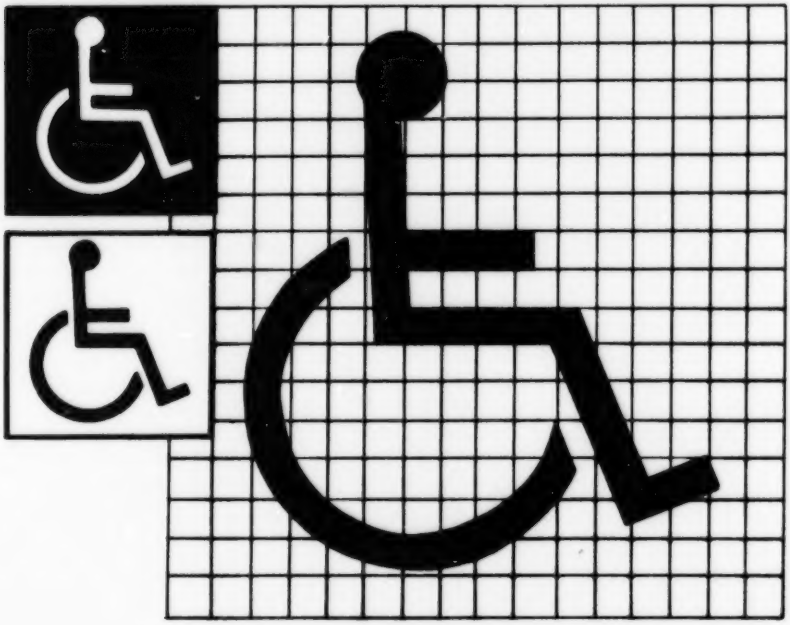
Aging

Those manifestations of the aging processes that significantly reduce mobility, flexibility, coordination, and perceptiveness but are not accounted for in the aforementioned categories.

International Symbol of Accessibility for the Handicapped

The International Symbol of Accessibility for the Handicapped should be used and prominently displayed to identify accessible facilities. This should not be limited to entrances to buildings, elevators, accessible rest rooms, water fountains, public telephones, recreation and rest areas, etc.

Any advertising of such facilities, including trademark signs erected to identify facilities, should display the International Symbol of Accessibility.



Aim

To develop a site that facilitates movement of all people, minimizing barriers which present difficulties or hazards to a portion of the population.

Why?

When developing the land around a building site, it is essential to keep in mind the people who will be using the area. Designing for those people who have the most difficulty with mobility will result in more functional design for all people.

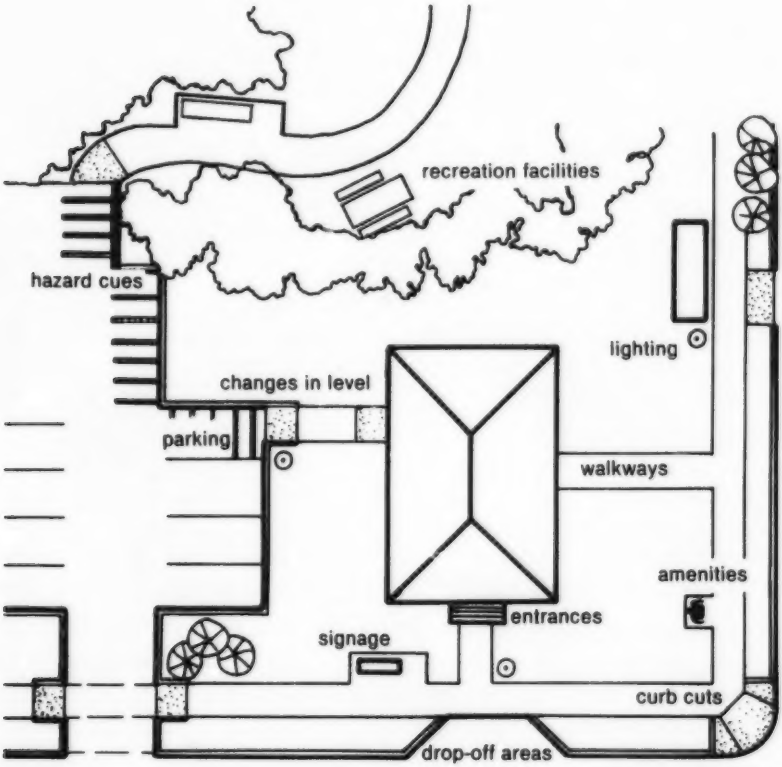
Changes in level are difficult for both people in wheelchairs and ambulatory people with mobility or balance problems. Even a rise of a few centimetres is an obstacle for a person in a wheelchair. In most cases the person will need assistance to negotiate one small step. It is an even greater barrier for someone in an electric wheelchair. These battery-operated chairs are heavy with minimal power, and function best on a smooth level surface. Such wheelchairs are used only by those people who do not have the strength and/or control of their arms to use a manually operated chair.

Sometimes it is impossible to avoid level changes. In such cases ramps should be designed with the minimum gradient possible. This will allow wheelchairs to move easily and minimize the chance of a person with mobility problems losing his or her balance.

Obstacles are a particular problem for people with limited or no vision. For example, random placement of bushes along a walkway may provide an interesting visual effect for sighted people, but present only a danger to people with visual impairments. They can also be a hazard for people with mobility problems.

Guidelines

- Changes in level should be minimized.
- Where they do occur, adequate ramping with a maximum gradient of 1:12 should be provided.
- Obstacles within or adjacent to walkways should be avoided.
- Ease of movement should be a prime concern.



Aim

The objective is to provide parking as close to a main accessible entrance as possible, ensuring a safe route which will allow sufficient space to get in and out of the car.

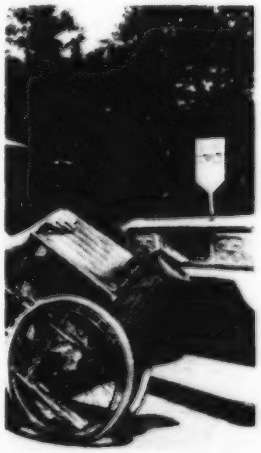
Why?

It is estimated that 7% of Canada's population has a mobility problem of some sort, but not all of these people will need specially designed parking spaces. Using that percentage as a guideline, 1% is a modest number of spaces to suggest.

The extra width is required to allow persons with wheelchairs or mobility aids to open the car door fully, remove their wheelchair or aid, and exit from the vehicle. Any slope will increase the difficulty in getting out of the car. The wheelchair could roll away or a person with balance problems could fall more easily.

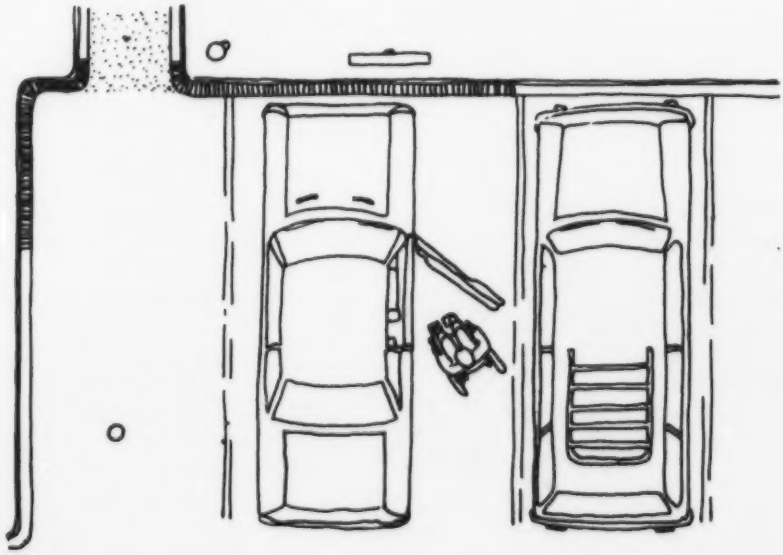
A person in a wheelchair is not easily seen by a car backing out because the height of the person is below the vision line of a driver. Also, people in wheelchairs or with mobility problems cannot move quickly to avoid hazards. The ability to obtain access to a walkway separate from traffic is thus more important to the disabled person than to the average pedestrian.

Designated spaces are usually in the most desirable locations, and are occupied quickly if not prominently identified. To ensure that these spaces are available for those who need them it is essential that proper signage is installed to discourage other drivers from using the space.



Guidelines

- At least 1% of the parking spaces required by the zoning by-law should be designed to accommodate handicapped people.
- The space should be hard-surfaced with a minimum width of 3.7m (12′).
- Any cross slope should be a maximum of 1:100.
- The space should be located as close to the main entrance as possible, preferably within 30 m (100′). The space should allow immediate access to a walkway without requiring a person to pass behind parked cars or across traffic.
- Such spaces should be identified and reserved for vehicles with handicapped persons.



Aim

The installation of signage should perform three major functions:

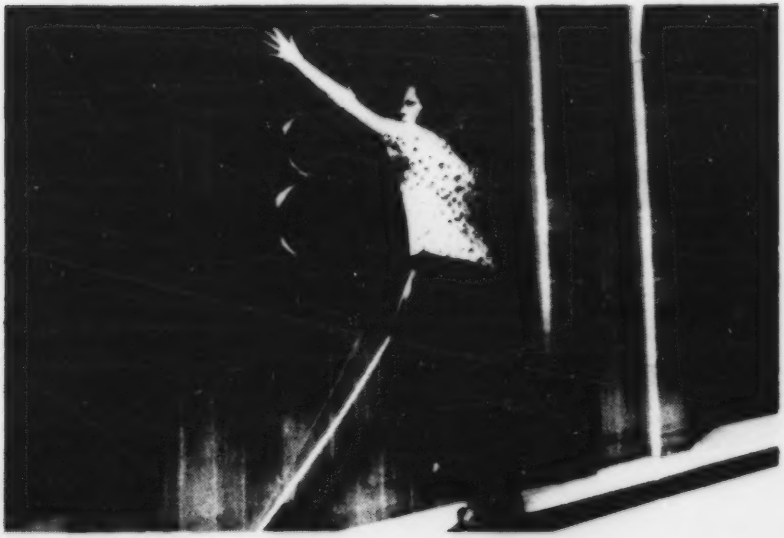
(1) to indicate an accessible entrance or facility

(2) to identify accessible features

(3) to warn of hazards.

Why?

It is important that signs be simple and highly visible. They should be placed at a level where they can be easily seen by someone standing or sitting. Tactile cues are important for visually impaired persons.



Guidelines

- Signs should be used wherever there may be confusion about direction.
- Signs should be located at 1 metre above the floor for tactile response.
- Signs on doors should be printed in embossed or raised letters.
- The International Symbol of Accessibility should be used only to indicate an accessible point.

Note:

The symbol and further information can be obtained from:

Canadian Rehabilitation Council
for the Disabled
1 Yonge Street
Suite 2110
Toronto, Ontario

Curb Cuts

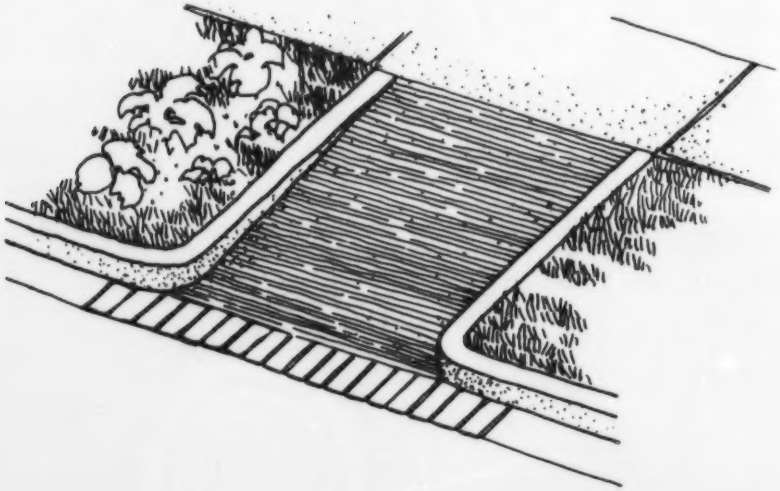
Aim

The objective is to provide a sloped cut through a curb or other low barrier.

Why?

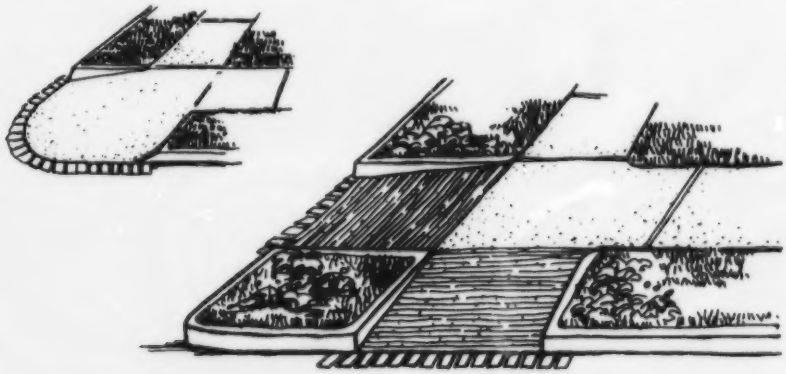
Curb cuts or ramps allow wheelchairs to pass over low barriers such as a step, curb or drainage cut. Because only a short distance is involved, as gentle a gradient is not required. However, even for such a short distance, an extreme gradient is still insurmountable.

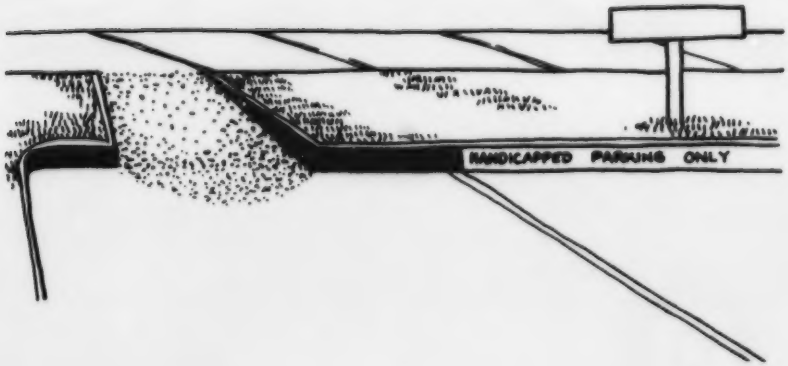
The cut needs to be designed to facilitate use of a wheelchair user without becoming a danger to those with impaired vision. A cut which bisects the curb can lead a visually impaired person into traffic. A lack of indication of where the cut ends and the road pavement begins can also be dangerous. A textural change on the curb cut can provide a warning.



Guidelines

- A minimum width of 91.5 cm. (36'') with 106.7 cm. (42'') being preferred.
- A maximum slope of 1 in 6 with 1:12 preferred.
- A textural change on the curb cut.
- A lip flush with the pavement.





Walkways

Aim

The objective is to create a smooth hard barrier-free surface which is wide enough to contain the pedestrian traffic flow, including people in wheelchairs or with walkers or canes.

Why?

A walkway should be sufficiently wide to allow two wheelchairs to pass.

Any break in a walkway, whether it is a rough surface or a gap, provides resistance to free movement. Wheelchair wheels may get caught. It takes much more energy to move over a surface that provides a great deal of friction. A cane or a walker could get caught in a gap or rough surface. A person who drags one foot may catch his/her foot and trip. Slippery surfaces are dangerous for all pedestrians.

Overhead clearance is important for all people, and particularly for the person with impaired vision or limited flexibility. Two metres is adequate for even a tall person to pass under without having to avoid an overhanging obstruction.

Guidelines

- At least 1.5 metres (5 ft.) in width.
- Surfacing should be non-slip.
- Joints should be less than 12.7 mm (1/2").
- A minimum vertical clearance of 2 metres (7ft.).
- Separated, as much as possible, from vehicular traffic.
- Grates and drainage structures should be flush with the walkway.
- Grates should have openings between parallel bars no greater than 12.6 mm (1/2").
- Wheel stops are necessary where a wheeled vehicle may roll into a hazardous area. They should be 5 to 8 cm. (2" to 3") high and 15 cm. (6") wide. Breaks in them every 2 metres (7') will allow water drainage.
- Soft surfaces should be avoided such as crushed rock, earth or grass. The crushed rock makes for an irregular surface, so that people with a mobility handicap find walking extremely difficult. Earth provides a poor surface for wheelchairs, while the blind have difficulty orienting themselves on grassy walkways.

Drop-off Areas

Aim

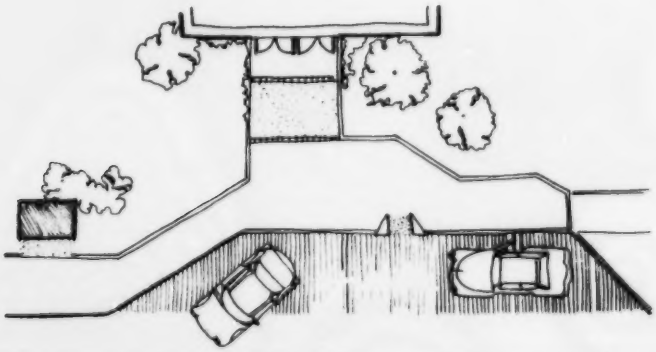
The objective is to provide for stopping as close to a main accessible entrance as possible, ensuring a safe route which will allow enough space to get in and out of the car.

Why?

Drop-off areas should allow disabled passengers to be left as close to the main entrance as possible to ensure safety and convenience for mobility impaired people. The same principles for design apply to this access route as apply to walkways in general. There should be a minimal change in level, proper ramping where necessary, and no obstacles. Ramping of curbs is necessary because even a 3 cm. rise is impossible for most people in wheelchairs to negotiate.

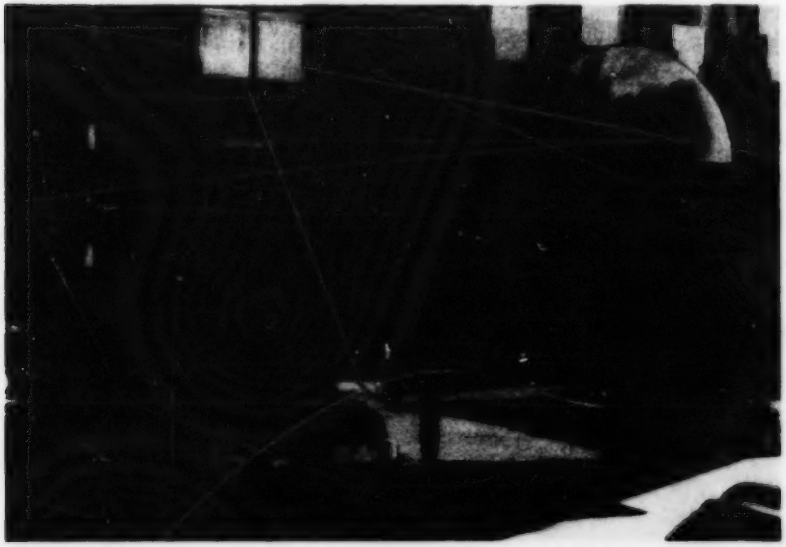
An overhead projection for the drop-off area and access route is desirable as it would serve as a protection from weather as well as keeping the walkway free of snow and ice. Such a projection needs to be high enough to allow a van to pass under it, minimum height restriction of 3m or 10′.

Placing the drop-off area so that it is visible from the entrance of the building will allow a person to wait in comfort until his/her transportation arrives, whether it be a cab or Wheel-Trans van.



Guidelines

- There should be access from the roadway to the main entrance of the building.
- The curb from the roadway to the sidewalk should be ramped.
- The area should be a "passenger loading" zone which allows drop-off and pick-up only.
- The drop-off area should be within 30 m (100') of the entrance.
- The drop-off area should be visible from the entrance.
- If the drop-off area is covered, the ceiling should be no lower than 3m (10').



Changes in Level

Aim

The objective of a ramp is to provide a sloped transition between levels that is easy to mount and safe to descend for both people in wheelchairs and ambulatory people with mobility problems.

Why?

Changes in level are often necessary or desirable, but should be limited as slopes demand skill in balance and greater physical exertion from handicapped persons. Any changes in level should be ramped. When stairs are used in conjunction with ramps, they should be properly designed for use by persons with mobility limitation.

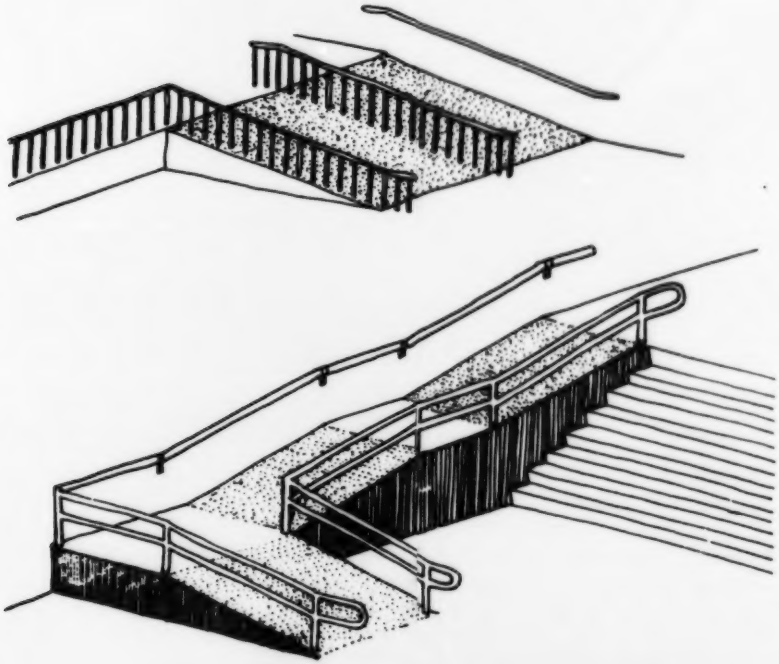
Ramps are essential to allow wheelchairs to negotiate relatively small changes in level, but they also present a potential danger to pedestrians if not properly designed and maintained. It is important to indicate ramping by use of handrails. This warns a person with balance problems of the slope and permits him/her to use the handrails for support. Because people with balance problems frequently have good use of only one hand, handrails need to be located on both sides. As well, the handrail extended 15 cm. beyond either end of the ramp serves to warn visually impaired people that a change in level is about to be encountered.

An excessively steep slope makes travelling on the ramp more difficult for both people with balance problems and those in wheelchairs. It is often easier for a person in a wheelchair to ascend a steep ramp than it is to control his/her wheelchair in descending the ramp. A ramp that is too steep may be totally unusable for most wheelchairs. A non-slip surface free of ice and snow is a safety feature no matter what the gradient. Stairs used in conjunction with ramps are most desirable because some people with balance problems find stairs easier to use than ramps.

Travelling up and down even gently sloped ramps is hard work and the person in a wheelchair needs regular rest stops with enough room to park the wheelchair without danger of its rolling. Landings that are used for turning must be large enough to allow the wheelchair user to turn comfortably.

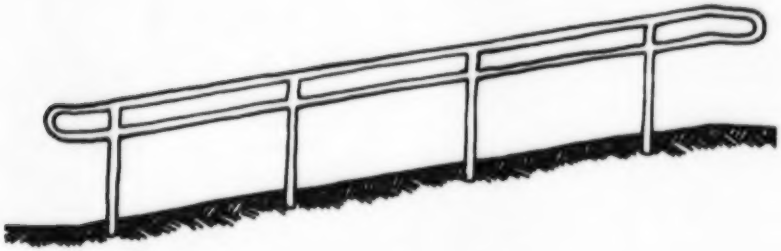
Guidelines for Ramps

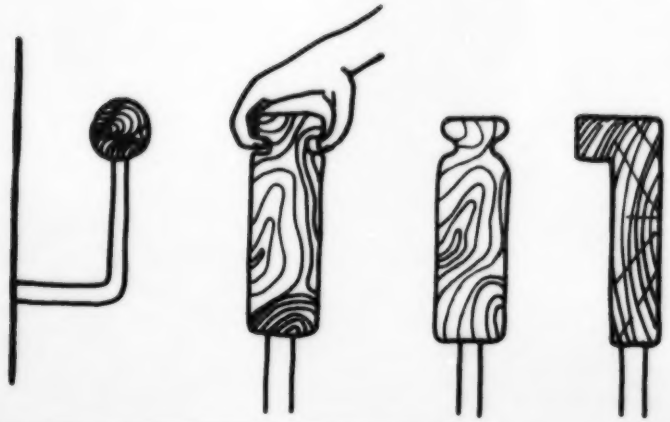
- Any slope greater than 1:20 should be treated as a ramp.
- Handrails are needed on both sides of a ramp at a distance of 1 metre (3') apart.
- The slope should not exceed 1:12, preferably being 1:20.
- The maximum ramp length between landings should not exceed 9 metres (30').
- Landings used for turning including top and bottom should be 1.5 metres square (5 ft. square).
- Intermediate landings used for rest should be 1.2 metres long (4').
- Ramps should be kept free of ice and snow, and a roof covering or snow melting device is desirable.



Guidelines for Handrails

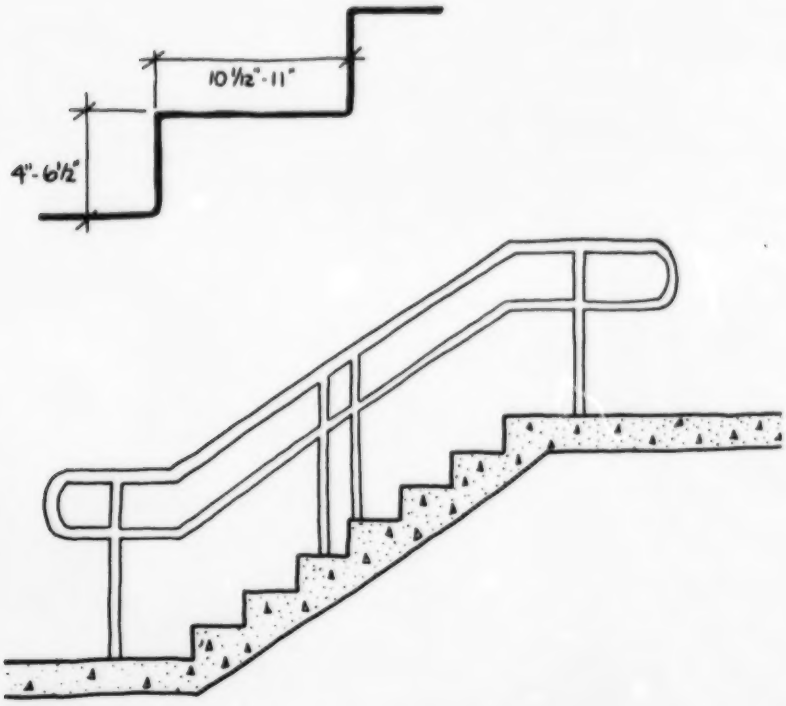
- Should be smooth and continuous.
- The rail should be shaped to allow easy grip.
- Wide stairways should have handrails at 6 metre intervals (20').
- Handrails should be at a height of 80 to 91.5 cm. (32-36") with a lower rail for children at 60-70 cm. (24-28").
- Handrails should extend 30 cm. (12") beyond the beginning and end of a stair or ramp.





Guidelines for Stairs

- Should have a minimum riser of 16.25 cm. (6 1/2") to maximum of 17.5 cm. (7"), a minimum tread of 26.25 cm. (10 1/2") and maximum tread of 27.5 cm. (11").
- Should have a non-resilient, non-skid finish.
- Should have a minimum clear width of 111.8 cm. (44") and should be wider if traffic is heavy.
- Should have a maximum rise between landings of 1.8 metres (6') if protected, 1.2 metres if not protected.
- Should have plain faces on the steps, with no tread overhangs or squared nosings.
- Should be well lit and have colour and textural contrast.



Aim

The objective is to design an entrance that is readily apparent and which can be easily used by all segments of the population.

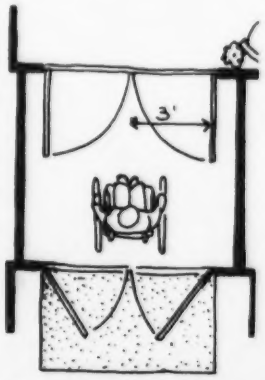
Why?

One of the psychological dilemmas that physically handicapped people face is going out into a community that is uninviting. Having to go through back doors rather than through main entrances accentuates this feeling and sets people with disabilities apart from other people.

The entrance should provide an easy passage into the building with overhead protection from weather. Ice and snow can make moving about and the opening of doors almost impossible for someone with mobility problems. When opening a door, a person is already slightly off-balance, so that anything that increases this imbalance can cause a person to fall out of their wheelchair, or an ambulatory person to fall down.

When opening a door, a person in a wheelchair needs enough space to enter. A level area will also help a person with balance problems to open the door with ease. Balanced doors are much easier for children, elderly people, people in wheelchairs and people with limited strength.

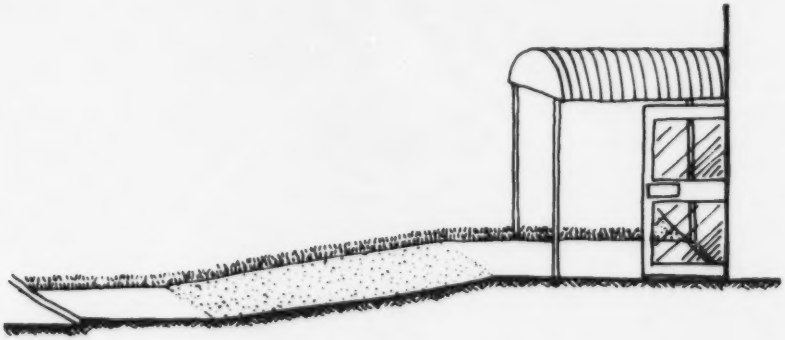
If there are two doors with a vestibule in between, the vestibule should be at least 1.52 m (5′) wide by 2.2 m (7′) long. This allows a person to enter the vestibule and open the inside door without having to reopen the outside door.



Ramping is necessary where even the slightest level change occurs because even one small step prevents a person in a wheelchair from going any further without some assistance.

Guidelines

- The main entrance should be accessible.
- There should be a level, hard surfaced area 1.52 metres square (5 square feet) in front of the door.
- Doors should be balanced to require a minimum of 2 kgs. (5 lbs.) pressure for opening.
- Any changes in level to the entrance should be ramped with a maximum gradient 1:12.
- Entranceways should be covered for weather protection. If not, ice and snow removal is essential.
- Turnstiles should be avoided. Parallel bars or gates are good alternatives.
- If turnstiles are used, an accessible entrance should be located adjacent to the turnstiles.



Aim

The objective is to create an environment around a building that is pleasant and convenient. Outdoor space should be designed in such a way that handicapped persons can enjoy the amenity of the space to the greatest extent possible.

Why?

Rest areas, plantings, water fountains, public telephones can all be planned so that disabled persons can enjoy their use. For instance, rest areas provide a stopping place off the walkway for persons wishing to rest. The space needs to be wide enough to provide space for a bench plus a wheelchair. The bench should be situated with enough space beside it so that a person in a wheelchair can pull up and transfer. The height of the bench should be low enough to allow transferring, yet high enough so that people who are not flexible can lower themselves comfortably to sit. Arm rests can assist a person in getting on or off the bench. Adequate head space facilitates rising from a seated position.

Well designed landscaping can provide visual interest and should be placed so that it can be enjoyed by people who cannot travel over expanses of grass. Plantings can also serve to shade rest areas and give a feeling of privacy. However, plantings should not interfere with the pathway. Weeds growing through cracks in the walkway can impede the progress of a wheelchair. Low overhanging branches can catch clothing. Random planting, particularly on walkways, serves as a hazard to visually impaired people.

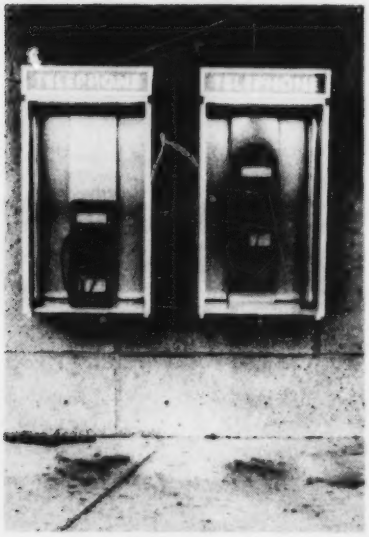
Most water fountains are designed in such a way that a person in a wheelchair cannot pull up beside them and reach the water. Recessed fountains usually do not allow room for a wheelchair. Free standing fountains often are either too high or the base is sufficiently wide to keep the person in a wheelchair some distance from the water. People with limited dexterity or strength in their hands find the controls difficult to use. Foot pedals are impossible for someone in a wheelchair to use.

Most public telephones are installed at a height which makes it

impossible for people in wheelchairs to reach the coin slots. A person sitting in a wheelchair can barely lift the receiver off the hook. Telephone booths are not large enough for a person in a wheelchair to enter.

Guidelines for Telephones

- Telephones should be placed with the coin slots no higher than 1.37 metres (54'').
- Telephone enclosures should be a minimum of 1 metre wide to allow wheelchair access.
- Volume controls are desirable.
- Adequate lighting within the open area of the telephone.

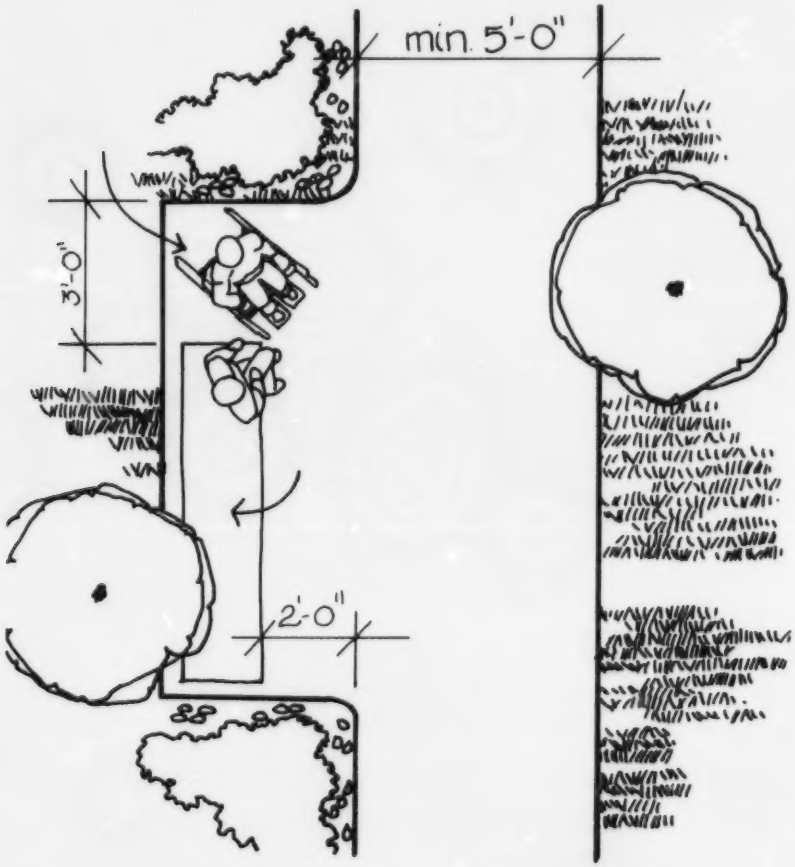


Guidelines for Water Fountains

- Water fountains should have a lever style hand operated control.
- Minimum 72.5 cm. (29'') clearance between the floor or ground and the fountain basin should be provided.
- The nozzle height should be approximately 82.5 cm. (33'').
- If the fountain is located in a recess, the recess should be a minimum of 1 metre wide.

Guidelines for Outdoor Facilities

- A rest area beside a bench should be a minimum of 122 cm. by 81.3 cm. (48 by 32").
- The height of the bench seat should be 18" to 20"; a heel space of 7.5 cm. (3") should be provided.
- Some planting should be placed along walkways and at rest areas.
- Any plantings should be orderly and placed off the main pedestrian travelways.

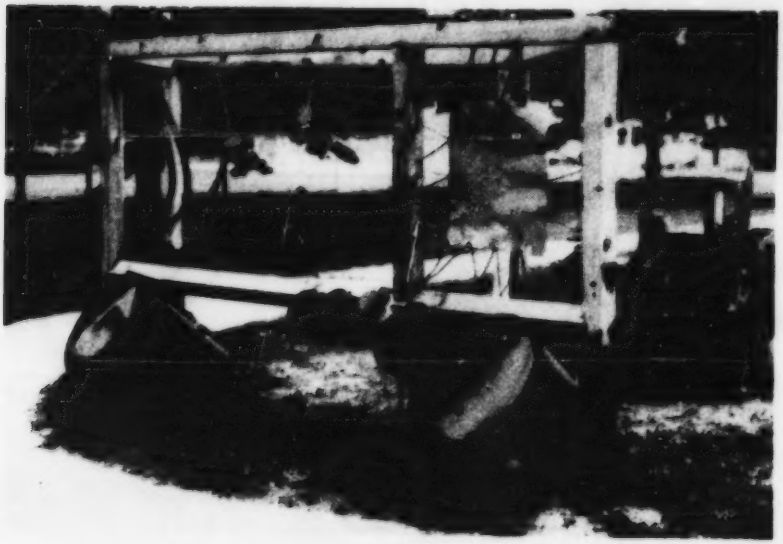


Aim

Segregation of recreation facilities in regard to varying physical characteristics is not usually desirable. These areas should be accessible to all people.

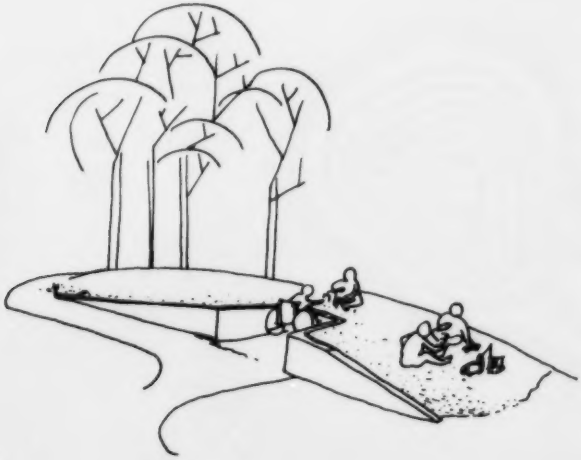
Why?

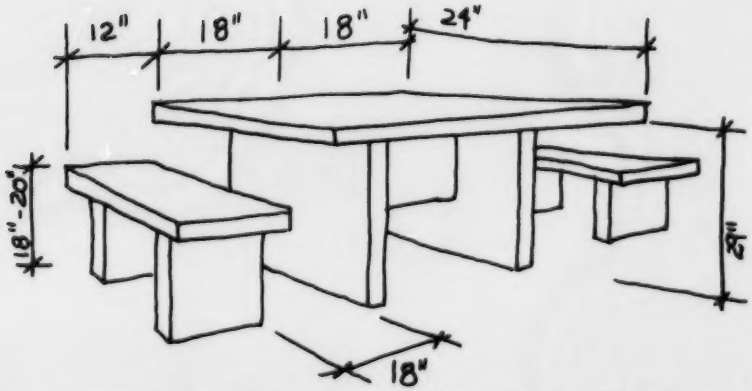
When access is provided, physically handicapped people can make some use of the facilities. In many cases, the areas and equipment can be designed to meet the needs of physically handicapped persons and still be used by other people.



Guidelines

- The recreation area should be accessible.
- Safety should be a consideration in choice of equipment.
- Facilities and apparatus should be interesting.
- Furniture such as picnic tables should allow for use by wheelchair bound persons.





Aim

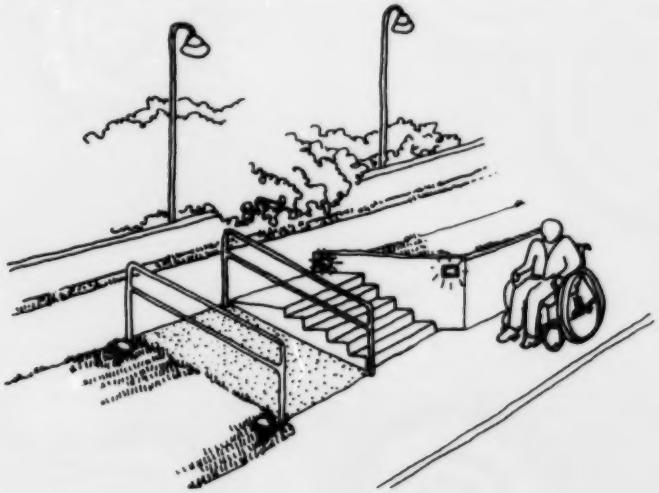
Lighting should be used to accentuate stairs, handrails, facilities and obstacles.

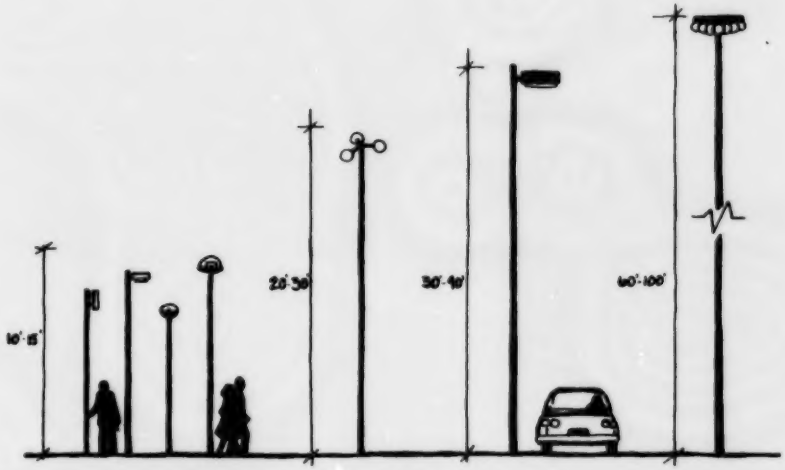
Why?

The level and quality of light needed by people with decreased vision has not yet been quantified but high levels of illumination with elimination of glare and reflection improve people's ability to see.

Guidelines

- Entranceways and walkways immediately adjacent to buildings should be lit to a minimum average level of 5 foot candles.
- Lighting levels should be increased in hazardous areas.
- Glare and reflection should be eliminated through use of matte finished surfaces.





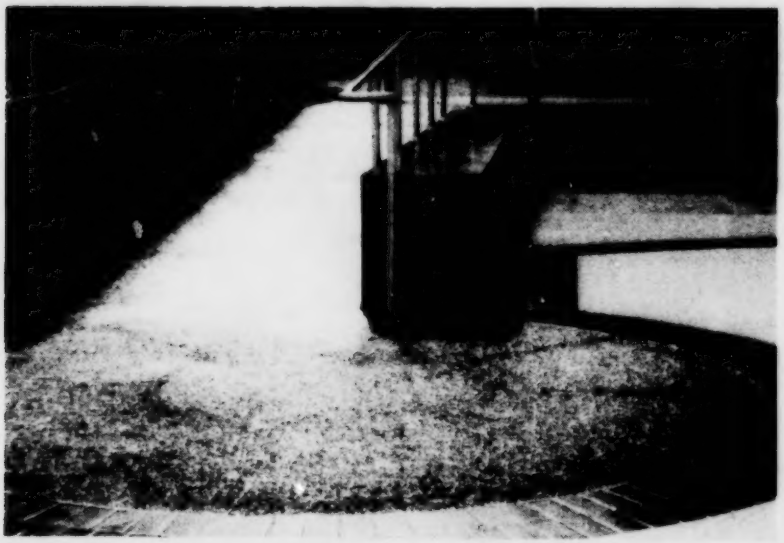
Colour and Texture as Cues

Aim

Changes in colour and texture can be used to establish the edges of walkways, and to warn of imminent dangers as well as changes in gradient.

Why?

The colour contrast is important for people with decreased vision, and also serves as a warning for people with mobility problems. Changes in texture accompanying colour contrast assist those who depend on tactile stimulation to know about their environment. No one colour combination is best because sensitivity to specific colours varies with eye conditions. The important consideration is contrast.



Guidelines

- colours should be used to highlight hazards and changes in level.
- colours must contrast sharply with backgrounds (i.e. they must have different values).
- for signs, light characters against a dark background are more easily seen.
- any area where a colour contrast occurs should be accompanied by a change in texture.